

54-000410US.ST25.txt
 SEQUENCE LISTING

<110> The Scripps Research Institute
 Anderson, J C
 Schultz, Peter G

<120> COMPOSITIONS OF ORTHOGONAL LEUCYL-tRNA AND AMINOACYL-tRNA
 SYNTHETASE PAIRS AND USES THEREOF

<130> 54-000410PC

<140> PCT/US 04/022061
 <141> 2004-07-07

<160> 72

<170> PatentIn version 3.2

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 35 40 45

Thr Arg Thr Phe Thr Ile Gly Asp Ala Phe Ala Arg Tyr Met Arg Met
 Page 6

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55

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Lys Gly Tyr Asn Val Leu Phe Pro Leu Gly Phe His Val Thr Gly Thr
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Pro Ile Ile Gly Leu Ala Glu Leu Ile Ala Lys Arg Asp Glu Arg Thr
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Ile Glu Val Tyr Thr Lys Tyr His Asp Val Pro Leu Glu Asp Leu Leu
100 105 110

Gln Leu Thr Thr Pro Glu Lys Ile Val Glu Tyr Phe Ser Arg Glu Ala
115 120 125

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130 135 140

Phe Thr Thr Thr Asp Glu Glu Tyr Gln Arg Phe Ile Glu Trp Gln Tyr
145 150 155 160

Trp Lys Leu Lys Glu Leu Gly Leu Ile Val Lys Gly Thr His Pro Val
165 170 175

Arg Tyr Cys Pro His Asp Gln Asn Pro Val Glu Asp His Asp Leu Leu
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Ala Gly Glu Glu Ala Thr Ile Val Glu Phe Thr Val Ile Lys Phe Arg
195 200 205

Leu Glu Asp Gly Asp Leu Ile Phe Pro Cys Ala Thr Leu Arg Pro Glu
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Thr Val Phe Gly Val Thr Asn Ile Trp Val Lys Pro Thr Thr Tyr Val
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Ile Ala Glu Val Asp Gly Glu Lys Trp Phe Val Ser Lys Glu Ala Tyr
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260 265 270

Asp Ala Ser Gln Phe Phe Gly Lys Tyr Val Ile Val Pro Leu Val Asn
275 280 285

Arg Lys Val Pro Ile Leu Pro Ala Glu Phe Val Asp Thr Asp Asn Ala
290 295 300

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305 310 315 320

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 Thr Asp Ile Glu Gly Val Pro Ala Glu Lys Leu Ile Arg Glu Leu Gly
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 Val Lys Ser Gln Lys Asp Lys Glu Leu Leu Asp Lys Ala Thr Lys Thr
 370 375 380
 Leu Tyr Lys Lys Glu Tyr His Thr Gly Ile Met Leu Asp Asn Thr Met
 385 390 395 400
 Asn Tyr Ala Gly Met Lys Val Ser Glu Ala Lys Glu Arg Val His Glu
 405 410 415
 Asp Leu Val Lys Leu Gly Leu Gly Asp Val Phe Tyr Glu Phe Ser Glu
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 435 440 445
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 Val Leu Asn His Leu Glu Lys Met Arg Ile Ile Pro Asp Tyr Tyr Lys
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 Glu Glu Phe Arg Asn Lys Ile Glu Trp Leu Arg Asp Lys Ala Cys Ala
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 Arg Arg Lys Gly Leu Gly Thr Arg Ile Pro Trp Asp Lys Glu Trp Leu
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 Ile Glu Ser Leu Ser Asp Ser Thr Ile Tyr Met Ala Tyr Tyr Ile Leu
 515 520 525
 Ala Lys Tyr Ile Asn Ala Gly Leu Leu Lys Ala Glu Asn Met Thr Pro
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 Glu Phe Leu Asp Tyr Val Leu Leu Gly Lys Gly Glu Val Gly Lys Val
 545 550 555 560
 Ala Glu Ala Ser Lys Leu Ser Val Glu Leu Ile Gln Gln Ile Arg Asp
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 Asp Phe Glu Tyr Trp Tyr Pro Val Asp Leu Arg Ser Ser Gly Lys Asp
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 Ile Leu His Ala Ala Glu Tyr Asp Ser Asp Ala Asp Trp Lys Ser Arg
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 Glu Val Glu Gly Leu Ala Asn His Leu Arg Arg Phe Tyr Asn Leu Val
 675 680 685
 Lys Glu Asn Tyr Leu Lys Glu Val Gly Glu Leu Thr Thr Leu Asp Arg
 690 695 700
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 Met Asp Asn Leu Gln Thr Arg Arg Ala Val Asn Ala Ala Phe Phe Glu
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 Leu Met Asn Asp Val Arg Trp Tyr Leu Arg Arg Gly Gly Glu Asn Leu
 740 745 750
 Ala Ile Ile Leu Asp Asp Trp Ile Lys Leu Leu Ala Pro Phe Ala Pro
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 His Ile Cys Glu Glu Leu Trp His Leu Lys His Asp Ser Tyr Val Ser
 770 775 780
 Leu Glu Ser Tyr Pro Glu Tyr Asp Glu Thr Arg Val Asp Glu Glu Ala
 785 790 795 800
 Glu Arg Ile Glu Glu Tyr Leu Arg Asn Leu Val Glu Asp Ile Gln Glu
 805 810 815
 Ile Lys Lys Phe Val Ser Asp Ala Lys Glu Val Tyr Ile Ala Pro Ala
 820 825 830
 Glu Asp Trp Lys Val Lys Ala Ala Lys Val Val Ala Glu Ser Gly Asp
 835 840 845
 Val Gly Glu Ala Met Lys Gln Leu Met Gln Asp Glu Glu Leu Arg Lys
 850 855 860

Leu Gly Lys Glu Val Ser Asn Phe Val Lys Lys Ile Phe Lys Asp Arg
865 870 875 880

Lys Lys Leu Met Leu Val Lys Glu Trp Glu Val Leu Gln Gln Asn Leu
885 890 895

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35 40 45

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50 55 60

Val Leu Phe Pro Met Ala Trp His Val Thr Gly Ala Pro Val Ile Gly
65 70 75 80

Ile Ala Arg Arg Ile Gln Arg Lys Asp Pro Trp Thr Leu Lys Ile Tyr
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Arg Glu Val His Arg Val Pro Glu Asp Glu Leu Glu Arg Phe Ser Asp
100 105 110

Pro Glu Tyr Ile Val Glu Tyr Phe Ser Arg Glu Tyr Arg Ser Val Met
115 120 125

Glu Asp Met Gly Tyr Ser Ile Asp Trp Arg Arg Glu Phe Lys Thr Thr
130 135 140

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 Asn Leu Trp Leu Asn Pro Asp Glu Asp Tyr Val Arg Val Glu Thr Gly
 225 230 235 240
 Gly Glu Glu Trp Ile Ile Ser Arg Ala Ala Val Asp Asn Leu Ser His
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 Arg Thr Asp His Glu Leu Leu Glu Arg Tyr Gly Leu Glu Asp Val Val
 325 330 335
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 Asp Pro Arg Leu Glu Asp Ala Thr Gly Glu Leu Tyr Lys Ile Glu His
 370 375 380
 Ala Arg Gly Val Met Ser Ser His Ile Pro Val Tyr Gly Gly Met Lys
 385 390 395 400
 Val Ser Glu Ala Arg Glu Val Ile Ala Asp Glu Leu Lys Asp Gln Gly
 405 410 415
 Leu Ala Asp Glu Met Tyr Glu Phe Ala Glu Arg Pro Val Ile Cys Arg
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420

425

430

Cys Gly Gly Arg Cys Val Val Arg Val Met Glu Asp Gln Trp Phe Met
 435 440 445

Lys Tyr Ser Asp Asp Ala Trp Lys Asp Leu Ala His Arg Cys Leu Asp
 450 455 460

Gly Met Lys Ile Ile Pro Glu Glu Val Arg Ala Asn Phe Glu Tyr Tyr
 465 470 475 480

Ile Asp Trp Leu Asn Asp Trp Ala Cys Ser Arg Arg Ile Gly Leu Gly
 485 490 495

Thr Arg Leu Pro Trp Asp Glu Arg Trp Ile Ile Glu Pro Leu Thr Asp
 500 505 510

Ser Thr Ile Tyr Met Ala Tyr Tyr Thr Ile Ala His Arg Leu Arg Glu
 515 520 525

Met Asp Ala Gly Glu Met Asp Asp Glu Phe Phe Asp Ala Ile Phe Leu
 530 535 540

Asp Asp Ser Gly Thr Phe Glu Asp Leu Arg Glu Glu Phe Arg Tyr Trp
 545 550 555 560

Tyr Pro Leu Asp Trp Arg Leu Ser Ala Lys Asp Leu Ile Gly Asn His
 565 570 575

Leu Thr Phe His Ile Phe His His Ser Ala Ile Phe Pro Glu Ser Gly
 580 585 590

Trp Pro Arg Gly Ala Val Val Phe Gly Met Gly Leu Leu Glu Gly Asn
 595 600 605

Lys Met Ser Ser Ser Lys Gly Asn Val Ile Leu Leu Arg Asp Ala Ile
 610 615 620

Glu Lys His Gly Ala Asp Val Val Arg Leu Phe Leu Met Ser Ser Ala
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Arg Arg Arg Ile Glu Trp Phe Arg Glu Phe Gly Glu Arg Val Ser Gly
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 675 680 685

Glu Ser Phe Ile Gly Arg Trp Met Met Gly Gln Leu Asn Gln Arg Ile
690 695 700

Arg Glu Ala Thr Arg Ala Leu Glu Ser Phe Gln Thr Arg Lys Ala Val
705 710 715 720

Gln Glu Ala Leu Tyr Leu Leu Lys Lys Asp Val Asp His Tyr Leu Lys
725 730 735

Arg Val Glu Gly Arg Val Asp Asp Glu Val Lys Ser Val Leu Ala Asn
740 745 750

Val Leu His Ala Trp Ile Arg Leu Met Ala Pro Phe Ile Pro Tyr Thr
755 760 765

Ala Glu Glu Met Trp Glu Arg Tyr Gly Gly Glu Gly Phe Val Ala Glu
770 775 780

Ala Pro Trp Pro Asp Phe Ser Asp Asp Ala Glu Ser Arg Asp Val Gln
785 790 795 800

Val Ala Glu Glu Met Val Gln Asn Thr Val Arg Asp Ile Gln Glu Ile
805 810 815

Met Lys Ile Leu Gly Ser Thr Pro Glu Arg Val His Ile Tyr Thr Ser
820 825 830

Pro Lys Trp Lys Trp Asp Val Leu Arg Val Ala Ala Glu Val Gly Lys
835 840 845

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Leu Gly Lys Ser Glu Val Thr Val Ile Asp Glu Tyr Ser Val Leu Met
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Asp Ala Ser Asp Tyr Ile Glu Ser Glu Val Gly Ala Arg Val Val Ile
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